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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/986,588	11/09/2001	Chi-Meng Liao	DED/3073/56	5811

7590 03/26/2004

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EXAMINER

BURCH, MELODY M

ART UNIT	PAPER NUMBER
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3683

DATE MAILED: 03/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/986,588	LIAO, CHI-MENG	
	Examiner	Art Unit	
	Melody M. Burch	3683	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 8 and 10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 8 and 10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 February 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the heat conducting glue claimed in the second to last line of claim 8 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

2. The disclosure is objected to because of the following informalities: in line 5 from the bottom of paragraph 2 bridging pages 5 and 6 the phrase "without directly in contact" should be changed to --without being directly in contact-- for grammatical purposes.

Appropriate correction is required.

Claim Objections

3. Claims 8 and 10 are objected to because of the following informalities: the phrase "a cavity being formed therebetween for a cooling agent to flow through...and wherein" in lines 3-5 from the bottom of claim 8 should be changed to --a cavity is formed therebetween for a cooling agent to flow through...and wherein--. Claim 10 is objected to due to its dependency from claim 8. Appropriate correction is required.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP-5851052 (JP'052) in view of US Patent 5704250 to Black and DE-4335654 (DE'654).

JP'052 shows in figure 4 a ball screw comprising: a screw bolt 2 having a first spirally threaded groove formed around the outer surface thereof, a hollow screw nut 3 to be sleeved over said screw bolt having a second spirally threaded groove corresponding to said first spirally threaded groove being formed around the inner surface thereof, a plurality of rolling balls 4 interposed between said first and second spirally threaded grooves so that said screw bolt and said screw nut are able to rotate with each other, and an outer cover 17 covering said screw nut such that a cavity being formed therebetween for an agent to flow through and wherein a guiding tube 15 for guiding flow of the agent is installed in said cavity.

JP'052 lacks the limitation of the ball screw having cooling means wherein the agent is a cooling agent that reduces the temperature of the screw nut and lacks the limitation wherein a heat conducting glue is filled between the guiding tube and the screw nut.

Black teaches in figure 3 and in col. 6 lines 28-30 the use of a ball screw with cooling means wherein the agent is specifically a cooling agent that flows through cavity

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86 formed between the screw nut 56 and an outer cover 36 thereby reducing the temperature of the screw nut 56 via the reduction of temperature of intervening elements.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the agent of JP '052 to have been a cooling agent, as taught by Black, in order to provide a means of preventing overheating of the screw nut and to provide an alternate means of helping to prevent thermal expansion.

DE'654 teaches in the last three lines of the abstract the use of pipes carrying either a heating or cooling agent being attached to a nearby object by way of a heat conducting glue.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the area between the guiding tube and the screw nut of JP'052, as modified, to have included a heat conducting glue, in view of the teachings of DE '654, in order to provide a means of improving the conduction of heat from the screw nut to the guiding tube.

6. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP-5851052 (JP'052) in view of US Patent 5704250 to Black and DE-4335654 (DE'654) as applied to claim 8 above, and further in view of US Patent 5809838 to Miyaguchi et al.

JP'052, as modified, describes the invention substantially as set forth above, but lacks the limitation of the ball screw having an entrance pipe with an opening and an exit pipe with an opening formed in the screw nut for circulation of the cooling agent.

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Miyaguchi et al. teach in figure 7 the use of an entrance pipe 43 with an opening 42 and an exit pipe with an opening shown immediately opposite element 43 formed in the screw nut 2 for circulation of an agent.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the screw nut of JP'052, as modified, to have included entrance and exit pipes in the screw nut, as taught by Miyaguchi et al., to facilitate the supply and exhaust of the agent into and out of the cavity between the screw nut and the cover.

Response to Amendment

7. The finality of the Office Action filed 11/6/03 is withdrawn in light of new grounds of rejection. The current office action is based on the entry of the amendment filed 2/4/04.

Conclusion

8. In order to complete the record, it should be noted that no conflict appears to presently exist between the subject matter defined by the instant claims and the subject matter of the claims of applicant's and/or assignee's copending application no.

09/839364 has been made of record. Accordingly, no double patenting rejection is entered into the instant application. See MPEP 804+ concerning double patenting type of rejections, if necessary. Applicant and/or assignee should maintain this clear line of patentable distinction between the instant claims and the claims of the indicated patent application.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melody M. Burch whose telephone number is 703-306-4618. The examiner can normally be reached on Monday-Friday (7:30 AM-4:00 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack Lavinder can be reached on 703-308-3421. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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March 23, 2004

Melody M. Burch

3/23/04